

1     **WHAT IS CLAIMED IS:**

2             1. A method for preparing thin integrated circuits having multiple  
3     circuit layers comprising the following acts:

4             forming a first circuit layer with multiple sections on a substrate;

5             depositing a resin-copper coating on the first circuit layer;

6             forming a second circuit layer with multiple sections on the resin-  
7     copper coating to serve as a topmost circuit layer on the substrate;

8             electrically connecting the first and second circuit layers;

9             connecting electronic components to the topmost circuit layer;

10            applying an encapsulant layer to protect the electronic components;

11     and

12            removing the substrate to expose the first circuit layer.

13            2. The method as claimed in claim 1, wherein multiple dimples are  
14     defined in the substrate before the first circuit layer is formed on the  
15     substrate including the dimples;

16            whereby the first circuit layer at the dimples become protrusions  
17     after the substrate is removed.

18            3 .The method as claimed in claim 1, wherein the substrate has a flat  
19     top face and the first circuit layer is formed on the substrate in flat.

20            4. The method as claimed in claim 1, wherein the first and second  
21     circuit layers are electronically connected by forming microvias through the  
22     resin-copper coating from the first circuit layer to the second circuit layer  
23     and;

24            forming a conductive layer on the second circuit layer into the

1 microvias to connect between the first and second circuit layers.

2 5. The method as claimed in claim 1, wherein the electronic  
3 components are connected to the second circuit layer by bonding metal wires  
4 between the electronic components and the second circuit layer.

5 6. The method as claimed in claim 2, wherein the electronic  
6 components are connected to the second circuit layer by bonding metal wires  
7 between the electronic components and the second circuit layer.

8 7. The method as claimed in claim 3, wherein the electronic  
9 components are connected to the second circuit layer by bonding metal wires  
10 between the electronic components and the second circuit layer.

11 8. The method as claimed in claim 4, wherein the electronic  
12 components are connected to the second circuit layer by bonding metal wires  
13 between the electronic components and the second circuit layer.

14 9. The method as claimed in claim 1, wherein the electronic  
15 components are connected to the second circuit layer by soldering tin balls  
16 between the electronic components and the second circuit layer.

17 10. The method as claimed in claim 2, wherein the electronic  
18 components are connected to the second circuit layer by soldering tin balls  
19 between the electronic components and the second circuit layer.

20 11. The method as claimed in claim 3, wherein the electronic  
21 components are connected to the second circuit layer by soldering tin balls  
22 between the electronic components and the second circuit layer.

23 12. The method as claimed in claim 4, wherein the electronic  
24 components are connected to the second circuit layer by soldering tin balls

1 between the electronic components and the second circuit layer.

2 13. The method as claimed in claim 1, wherein multiple isolating  
3 layers are respectively applied to adjacent sections of the exposed first circuit  
4 layer after the substrate is removed and multiple tin-paste layers are  
5 respectively applied to the first circuit layer between adjacent isolating layers.

6 14. The method as claimed in claim 2, wherein multiple isolating  
7 layers are respectively applied to adjacent sections of the exposed first circuit  
8 layer after the substrate is removed and multiple tin-paste layers are  
9 respectively applied to the first circuit layer between adjacent isolating layers.

10 15. The method as claimed in claim 3, wherein multiple isolating  
11 layers are respectively applied to adjacent sections of the exposed first circuit  
12 layer after the substrate is removed and multiple tin-paste layers are  
13 respectively applied to the first circuit layer between adjacent isolating layers.

14 16. The method as claimed in claim 4, wherein multiple isolating  
15 layers are respectively applied to adjacent sections of the exposed first circuit  
16 layer after the substrate is removed and multiple tin-paste layers are  
17 respectively applied to the first circuit layer between adjacent isolating layers.

18 17. The method as claimed in claim 1, wherein the method further  
19 comprises the following acts before applying the electronic components to  
20 the topmost circuit layer,

21 depositing a resin-copper coating on the second circuit layer after the  
22 second circuit layer is constructed;

23 forming a third circuit layer with multiple sections on the resin-  
24 copper coating to serve as the topmost circuit layer on the substrate;

- 1 electrically connecting the second and third circuit layers; and
- 2 connecting the electronic components to the topmost circuit layer;
- 3 wherein the acts are repeated to increase a consequential circuit layer
- 4 for each time to achieve multiple circuit layers on the integrated circuit.